

In the Claims:

Please amend claim 1 in the following manner:

- 1 1. (Amended) A method for moving a carriage assembly from an initial
2 position to a target position relative to a storage medium having a center and
3 a circumference, and rotating relative to the [said] carriage assembly at a
4 circumferential velocity about the [said] center, said method comprising the
5 steps of:
6 determining a first radial distance between the [said] initial position of the
7 [said] carriage assembly and the [said] center of the [said] storage medium;
8 determining a second radial distance between the [said] target position of
9 the [said] carriage assembly and the [said] center of the [said] storage medium;
10 determining a circumferential distance between the [said] initial position of
11 the [said] carriage assembly and the [said] target position of the [said] carriage
12 assembly [taken parallel to said circumference of said storage medium];
13 determining an initial circumferential velocity of the [said] storage medium
14 about the [said] center of the [said] storage medium; and
15 calculating a velocity trajectory relative to said first radial distance, said
16 second radial distance, said circumferential distance, and said initial
17 circumferential velocity so [such] that[, if] when the [said] carriage assembly is
18 moved from the [said] initial position to the [said] target position with said
19 velocity trajectory, the [said] carriage assembly will arrive radially and
20 circumferentially at the [said] target position at substantially the same time[; and
21 moving said carriage assembly from said initial position to said target
22 position substantially at said velocity trajectory].

Please add the following claims 17-47:

1 ¹17. The method according to claim 1 wherein said circumferential distance
2 between the initial position of the carriage assembly and the target position of
3 the carriage assembly is taken parallel to the circumference of the storage
4 medium.

C3
1 ³18. The method according to claim 1 including the further step of moving
2 the carriage assembly from the initial position to the target position substantially
3 at said velocity trajectory.

1 ⁴19. The method according to claim 1 further including the step of
2 determining a target circumferential velocity of the storage medium about the
3 center of the storage medium.

1 ⁵20. The method according to claim ⁴19 further including the step of
2 applying a force to the storage medium to change the rotation thereof from said
3 initial circumferential velocity to said target circumferential velocity.

1 ⁶21. The method according to claim ⁴19 wherein said velocity trajectory is
2 relative to a desired circumferential velocity.

1 ⁷22. The method according to claim ⁴19 wherein the carriage assembly will
2 arrive radially and circumferentially at the target position at substantially the
3 same time when moved with said velocity trajectory from the initial position to
4 the target position, and when said initial circumferential velocity of the storage
5 medium is changed to said target circumferential velocity.

1 ⁸23. The method according to claim ⁴19 wherein the storage medium
2 achieves said target circumferential velocity before the carriage assembly
3 arrives at the target position.

1 ⁹24. The method according to claim ⁴19 wherein the storage medium
2 achieves said target circumferential velocity at substantially the same time as
3 the carriage assembly arrives at the target position.

C13
1 ¹⁰25. A control apparatus, comprising:
2 a carriage assembly movable from an initial position to a target position
3 relative to a respective storage medium having a center and a circumference,
4 said respective storage medium rotating relative to said carriage assembly at
5 a circumferential velocity about said center;
6 means for determining a first radial distance between said initial position
7 of said carriage assembly and said center of the storage medium;
8 means for determining a second radial distance between said target
9 position of said carriage assembly and said center of the storage medium;
10 means for determining a circumferential distance between said initial
11 position of said carriage assembly and said target position of said carriage
12 assembly;
13 means for determining an initial circumferential velocity of the storage
14 medium about said center of the storage medium; and
15 means for calculating a velocity trajectory relative to said first radial
16 distance, said second radial distance, said circumferential distance, and said
17 initial circumferential velocity so that when said carriage assembly is moved
18 from said initial position to said target position with said velocity trajectory, said
19 carriage assembly will arrive radially and circumferentially at said target position
20 at substantially the same time.

1 ¹¹26. The apparatus according to claim ¹⁰25 wherein said circumferential
2 distance between said initial position of said carriage assembly and said target
3 position of said carriage assembly is taken parallel to said circumference of the
4 storage medium.

C³ 1 ¹²27. The apparatus according to claim ¹⁰25 further including means for
2 moving said carriage assembly from said initial position to said target position
3 substantially at said velocity trajectory.

1 ¹³28. The apparatus according to claim ¹⁰25 further including means for
2 determining a target circumferential velocity of the storage medium about said
3 center thereof.

1 ¹⁴29. The apparatus according to claim ¹³28 further including means for
2 applying a force to the storage medium to change the rotation thereof from said
3 initial circumferential velocity to said target circumferential velocity.

1 ¹⁵30. The apparatus according to claim ¹³28 wherein said velocity trajectory
2 is relative to a desired circumferential velocity.

1 ¹⁶31. The apparatus according to claim ¹³28 wherein said carriage assembly
2 arrives radially and circumferentially at said target position at substantially the
3 same time when moved with said velocity trajectory from said initial position to
4 said target position, and when said initial circumferential velocity of the storage
5 medium is changed to said target circumferential velocity.

1 ¹⁷32. The apparatus according to claim ¹³28 wherein the storage medium
2 achieves said target circumferential velocity before said carriage assembly
3 arrives at said target position.

1 ¹⁸33. The apparatus according to claim ¹³28 wherein the storage medium
2 achieves said target circumferential velocity at substantially the same time as
3 said carriage assembly arrives at said target position.

¹³ Subp 1
2 34. An optical disc system operated according to the method recited in
any one of claims 1, 17, 18, 19, 20, 21, 22, 23, or 24.

1 35. An optical disc system including the control apparatus recited in any
2 one of claims 25, 26, 27, 28, 29, 30, 31, 32, or 33.

²¹
1 36. A method for moving a carriage assembly from an initial position to a
2 target position relative to a storage medium having a center and a
3 circumference, and rotating relative to the carriage assembly at a
4 circumferential velocity about the center, said method comprising the steps of:
5 determining a first radial distance between the initial position of the
6 carriage assembly and the center of the storage medium;
7 determining a second radial distance between the target position of the
8 carriage assembly and the center of the storage medium;
9 determining a circumferential distance between the initial position of the
10 carriage assembly and the target position of the carriage assembly taken
11 parallel to said circumference of said storage medium;
12 determining an initial circumferential velocity of the storage medium about
13 the center of the storage medium;

14 calculating a velocity trajectory relative to said first radial distance, said
15 second radial distance, said circumferential distance, and said initial
16 circumferential velocity so that when the carriage assembly is moved from the
17 initial position to the target position with said velocity trajectory, the carriage
18 assembly will arrive radially and circumferentially at the target position at
19 substantially the same time; and

20 moving the carriage assembly from the initial position to the target position
21 substantially at said velocity trajectory.

C3
1 ³²
37. A control apparatus, comprising:

2 a carriage assembly movable from an initial position to a target position
3 relative to a respective storage medium having a center and a circumference,
4 said respective storage medium rotating relative to said carriage assembly at
5 a circumferential velocity about said center;

6 a first measuring assembly utilized to determine a first radial distance
7 between said initial position of said carriage assembly and said center of the
8 storage medium;

9 a second measuring assembly employed to determine a second radial
10 distance between said target position of said carriage assembly and said center
11 of the storage medium;

12 a third measuring assembly implemented to determine a circumferential
13 distance between said initial position of said carriage assembly and said target
14 position of said carriage assembly;

15 a first detector assembly activated to determine an initial circumferential
16 velocity of the storage medium about said center of the storage medium; and

17 a processor operated to calculate a velocity trajectory relative to said first
18 radial distance, said second radial distance, said circumferential distance, and
19 said initial circumferential velocity so that when said carriage assembly is

20 moved from said initial position to said target position with said velocity
21 trajectory, said carriage assembly will arrive radially and circumferentially at
22 said target position at substantially the same time.

1 ²³38. The apparatus according to claim ²²37 wherein said circumferential
2 distance between said initial position of said carriage assembly and said target
3 position of said carriage assembly is taken parallel to said circumference of the
4 storage medium.

1 ²⁴39. The apparatus according to claim ²²37 further including an actuator
2 employed to move said carriage assembly from said initial position to said
3 target position substantially at said velocity trajectory.

1 ²⁵40. The apparatus according to claim ²²37 further including a second
2 detector assembly implimented to determine a target circumferential velocity
3 of the storage medium about said center thereof.

1 ²⁶41. The apparatus according to claim ²⁵40 further including a motor that
2 applies a force to the storage medium to change the rotation thereof from said
3 initial circumferential velocity to said target circumferential velocity.

1 ²⁷42. The apparatus according to claim ²⁵40 wherein said velocity trajectory
2 is relative to a desired circumferential velocity.

1 ²⁸43. The apparatus according to claim ²⁵40 wherein said carriage assembly
2 arrives radially and circumferentially at said target position at substantially the
3 same time when moved with said velocity trajectory from said initial position to